

EXAMINER'S AMENDMENT

Amendment

1. This office action is responsive to the amendment filed on 12/9/10 and the examiner initiated interview held on 1/24/11 and the interview on 2/7/11. As directed by the amendment: claims 132, 134-136, 138-145, 147, 149-151, 153, 154, 158, 160, 161, 163, 164, 166, 171-184, 186-188, 190, 191, 193, 195 and 196 have been amended, claims 133, 146, 165, 189, 192 and 194 have been canceled, and new claims 197-311 have been added. Thus, claims 132, 134-145, 147-164, 166-188, 190-191, 193 and 195-311 are presently pending in the application.

Drawings

2. The drawings were received on 2/4/11. These drawings are accepted.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 2/2/11 was filed after the mailing date of the Notice of Allowance on 1/28/11. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

4. Claims 132, 134-145, 147-164, 166-188, 190-191, 193 and 195-264 and 266-311 are allowable. Claims 132, 134-135, 139-145, 147-164, 166-188, 190-191, 193 and 197,

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previously withdrawn from consideration as a result of a restriction requirement, require all the limitations of an allowable claim. Pursuant to the procedures set forth in MPEP § 821.04(a), **the restriction requirement among inventions I-IX, as set forth in the Office action mailed on 10/12/10, is hereby withdrawn** and claims 132, 134-135, 139-145, 147-164, 166-188, 190-191, 193 and 197 are hereby rejoined and fully examined for patentability under 37 CFR 1.104. In view of the withdrawal of the restriction requirement, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Paul Bowen on 1/24/11.

The application has been amended as follows:

Amendment to the title:

~~Breatable Gas Apparatus With~~ Humidifier With Removable Water Tank

Amendment to the claims:

132. (Currently Amended) Apparatus for the treatment of obstructive sleep apnea, comprising:

a continuous positive airway pressure device; and

a humidifier including:

a humidifier base, a humidifier lid movable between closed and open positions while connected to the humidifier base,

a removable humidifier tank having a tank lid including an outlet, said humidifier lid being adapted to seal around the outlet of the tank lid when the humidifier lid is in the closed position, and

a humidifier heater plate;

the continuous positive airway pressure device and the humidifier are releasably connected by a latch;

the humidifier lid includes an air delivery portion adapted to mate with an air delivery tube;

the humidifier lid and the humidifier base are connected by a hinge adapted to allow the humidifier lid to rotate between the closed position and an open position;

the humidifier lid and the humidifier base include a locking mechanism adapted to releasably hold the humidifier lid in the closed position;

the humidifier base is adapted to receive the humidifier tank when the humidifier lid is in an open position and to locate the humidifier tank in heat transfer communication with the humidifier heater plate, and to establish a sealed gas flow path between the continuous positive airway pressure device, and the air delivery portion of the humidifier lid when the humidifier lid is in the closed position.

136. (Currently Amended) A humidifier [[-]] comprising
a removable water tank having a water tank lid with an outlet,
a humidifier base having a water tank receiving portion; and
a humidifier lid having an outlet adapted to mate with an air delivery tube, the humidifier lid being connected to the humidifier base such that the humidifier lid is movable between a closed position and an open position while connected to the humidifier base;

wherein the humidifier lid is adapted to seal against a surface surrounding the outlet of the water tank lid to such that the humidifier includes a sealed air flow path extending from the water tank and through the outlet of the humidifier lid when the humidifier lid is in the closed position.

139. (Currently Amended) A breathable gas supply apparatus for treatment of respiratory disorders comprising:

a continuous positive airway pressure device adapted for releasable connection to a humidifier; and

a humidifier comprising:

a humidifier base having an aperture adapted to receive a supply of breathable gas from the continuous positive airway pressure device;

a first seal extending about the aperture;

a removable water tank having an air inlet and an air outlet, and respective surfaces surrounding the air inlet and air outlet, the surface surrounding the inlet being flat, the water tank having a water tank lid including an outlet;

a humidifier lid with an air delivery portion adapted to mate with an air delivery tube so that the supply of breathable gas can be provided to a patient interface;

the humidifier lid being adapted to seal around the outlet of the water tank lid when the humidifier lid is in a closed position, via a second seal located on an underside of the humidifier lid;

wherein the first seal is adapted to be in sealing relationship with the flat surface surrounding the air inlet of the water tank when the water tank abuts the first seal; and

the second seal is adapted to be in sealing relationship with the surface surrounding the air outlet of the water tank when the humidifier lid is in the closed position.

166. (Currently Amended) A method of sealably locating a removable humidifier water tank in a humidifier base comprising:

positioning a rear surface of the humidifier water tank to abut a humidifier seal supported by the humidifier base to form a sealed air path from a flow generator outlet into an interior of the water tank; and

pressing a lid of the humidifier onto a lid of the water tank to sealingly contact a surface surrounding an outlet aperture of the water tank lid to form a sealed air path between an interior of the humidifier water tank and an air delivery tube.

174. (Currently Amended) A humidifier for delivering humidified breathable gas to a patient, including:

a humidifier case having a hinged humidifier lid,

a removable water tank adapted to be positioned at least partly in said case, the water tank having a tank lid,

a heater in heat transfer communication with said water tank,

a gas flow path including a gas inlet, a humidified gas outlet and an intermediate gas flow path to contact the gas with water vapour from said water tank,

wherein said water tank has a gas passage inlet and a gas passage outlet communicating with said gas flow path, said gas passage outlet being formed in the tank lid,

said humidifier further including a gas passage inlet seal to form a first sealing connection between said gas passage inlet and said gas flow path, and a gas passage

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outlet seal to form a second sealing connection between the gas passage outlet and said gas flow path,

wherein said first and second sealing connections are established by inserting said water tank at least partly within the base and hinged closing of said humidifier lid to sealingly contact a surface surrounding the gas passage outlet of the tank lid.

178. (Currently Amended) In a humidifier assembly for a flow generator used in delivery of a supply of breathable gas to a patient for treatment of sleep disordered breathing, the humidifier assembly comprising a removable water tank having an inlet and a water tank lid including an outlet, a base having a blower outlet and a water-tank-receiving-portion, and a hinged lid with an engagable locking mechanism,

a method of forming a first seal between the water tank inlet and the blower outlet of the base and forming a second seal between the outlet of the water tank lid and the hinged lid, the method comprising:

(i) placing the water tank at least partly in the tank-receiving-portion of the base so as to position the water tank inlet and the blower outlet adjacent one another;

(ii) closing the hinged lid to establish sealing contact between the hinged lid and a surface surrounding the outlet of the water tank lid; and

(iii) engaging the locking mechanism.

182. (Currently Amended) In a humidifier assembly for a flow generator used in delivery of a supply of breathable gas to a patient for treatment of sleep disordered

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breathing, the humidifier assembly comprising a removable water tank including a tank lid having an air outlet, the humidifier assembly including a hinged lid with an engagable locking mechanism,

a method of forming a seal between a surface surrounding the air outlet formed on the tank lid and the air delivery portion comprising:

(i) closing the hinged lid to establish a sealed connection between the hinged lid and the surface surrounding the air outlet of the tank lid; and

(ii) engaging the locking mechanism.

186. (Currently Amended) A humidifier assembly for a flow generator used in delivery of a supply of breathable gas to a patient for treatment of sleep disordered breathing, the humidifier assembly comprising a removable water tank having a water tank lid, a water tank air inlet and a water tank air outlet, the water tank air outlet being formed in the water tank lid, a humidifier base having a blower outlet and a water-tank-receiving portion, and a humidifier lid having an air delivery portion adapted to mate with an air delivery tube so that the supply of breathable gas can be provided to a patient interface, wherein said water-tank-receiving portion and water tank have complementary formations adapted to guide positioning of said water tank to align said water tank air inlet with said blower outlet, the humidifier lid being adapted to sealingly contact a surface surrounding the water tank air outlet of the water tank lid upon closing of the humidifier lid, to establish a sealed air flow path extending through the water tank

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lid and the humidifier lid.

188. (Currently Amended) A humidifier for delivering humidified breathable gas to a patient, including a humidifier case having a humidifier lid, a removable water tank at least partially within said case and including a water tank lid, said humidifier lid being adapted to seal around an outlet aperture of the water tank lid when the humidifier lid is closed, a heater in heat transfer communication with said water tank, a gas flow path including a gas inlet, a humidified gas outlet in said humidifier lid and an intermediate gas flow path which contacts the gas with water vapour from said water tank, and a gas outlet seal operatively associated with said humidifier lid whereby closing said humidifier lid creates sealed communication between said humidified gas outlet the seal and a gas space of said water tank.

198. (Currently Amended) A respiratory apparatus for treating a patient comprising a base and a tank, a flow path extending from an inlet of the base to an outlet of the base, the tank forming an intermediate part of the flow path and including a tank inlet and a tank lid having a tank outlet, the base having a rear tank seal, a top tank seal, and a humidifier lid having an inner surface on which the top tank seal is mounted, the humidifier lid being movable between an open position in which the tank is removably insertable into the base and a closed position, wherein the tank and the base are configured and arranged such that insertion of the tank in the base and closing of

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the humidifier lid seals the tank inlet and outlet against the rear tank seal and the top tank seal, respectively, and secures the tank relative to the base.

203. (Currently Amended) An apparatus for treatment of obstructive sleep apnea, comprising:

a continuous positive airway pressure device capable of providing a supply of air at a pressure in the range of about 4cmH₂O to about 20cmH₂O; and

a humidifier connectable to the continuous positive airway pressure device, the humidifier including:

a humidifier base,

a humidifier lid hingedly connected to the humidifier base to allow the humidifier lid to close and open, the humidifier lid including an air delivery pipe constructed and arranged to mate with an air delivery tube, the humidifier lid further including a lid seal,

the humidifier base further including a humidifier heater plate and a humidifier base seal; and

a removable water tank having a tank base to receive water and a tank lid, the tank base including a heat conductive portion to conduct heat from the humidifier heater plate to water in the tank in use,

the apparatus further comprising a latch to releasably connect the continuous positive airway pressure device to the humidifier; and a locking mechanism constructed and arranged to releasably hold the humidifier lid when closed,

wherein the humidifier base is constructed and arranged to receive the water tank when the humidifier lid is open;

wherein, when the humidifier base receives the water tank, the heat conductive portion of the water tank is positioned relative to the humidifier heater plate to allow heat transfer communication therebetween in use;

wherein, when the continuous positive airway pressure device and the humidifier are latched together and the humidifier lid is closed with the water tank placed in the humidifier base, a sealed gas flow path is established, said sealed gas flow path extending from the continuous positive airway pressure device, through a humidifier base seal located between the humidifier base and a rear surface of the water tank, through an interior of the water tank, through the lid seal surrounding an outlet of the tank lid and located on an underside of the humidifier lid, and to the air delivery pipe of the humidifier lid; and

wherein an engagement face of the continuous positive airway pressure device includes electrical connectors to deliver power to the humidifier heater plate.

237. (Currently Amended) A humidifier comprising

a removable water tank having a water tank lid;

a humidifier base having a water tank receiving portion; and

a humidifier lid having an outlet adapted to mate with an air delivery conduit;

wherein the humidifier lid is adapted to be in sealing relationship with an outlet of the water tank lid to allow a flow of air from the water tank to the air delivery conduit when the humidifier lid is in a closed position.

243. (Currently Amended) A breathable gas supply apparatus for treatment of respiratory disorders comprising:

a continuous positive airway pressure device; and

a humidifier adapted for releasable connection to the continuous positive airway pressure device, the humidifier comprising:

a humidifier base having 1) an air inlet port adapted to receive a supply of breathable gas from the continuous positive airway pressure device and 2) an aperture downstream of the air inlet port;

a first seal adjacent the aperture;

a removable water tank having an air inlet and an air outlet, and a respective surface surrounding each of the air inlet and the air outlet, the surface surrounding the air inlet being flat;

a humidifier lid with an air delivery portion adapted to mate with an air delivery tube so that the supply of breathable gas can be provided to a patient interface; and

a second seal located on an underside of the humidifier lid,

wherein:

the first seal is adapted to be in sealing relationship with the flat surface surrounding the air inlet of the water tank when the water tank abuts the first seal; and

the second seal is adapted to be in sealing relationship with the surface surrounding the air outlet of the water tank when the humidifier lid is in a closed position.

264. (Currently Amended) A humidifier adapted to receive a supply of air at positive pressure for delivery to an air delivery tube, comprising a base with a heater plate, a removable water tank configured to be at least partly received in the base, and a humidifier lid in sealed communication with an outlet of the water tank and having an air delivery tube connector configured for connection to the air delivery tube, wherein the water tank includes a tank base and a water tank lid.

265. (Canceled).

266. (Currently Amended) The humidifier according to claim ~~[[265]]~~ 264, wherein the water tank lid is configured for pivoting movement relative to the tank base.

277. (Currently Amended) A humidifier adapted for interconnection between a continuous positive airway pressure device and an air delivery tube for delivery of a supply of humidified breathable gas to a patient for treatment of obstructive sleep apnea, said humidifier including an air flow path between the continuous positive airway pressure device and the air delivery tube, the humidifier having a water tank and the humidifier being constructed and arranged to allow removal of the water tank for refilling

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with water without disconnection of the air delivery tube, wherein the water tank is configured to be in sealing relationship with the air flow path when an inlet to the water tank ~~abuts~~ is pressed against a first seal of the humidifier and a lid of the humidifier is pressed against an outlet of the water tank.

281. (Currently Amended) A respiratory apparatus for a patient, comprising:

a base unit having a hinged lid and a base seal, the lid having an aperture, an inside lid seal provided around the aperture, and an air delivery tube connector extending from an outside surface of the lid and configured to be connected to an air delivery tube; and

a removable humidifier tank having a generally flat rear inlet sealing surface engaged with a generally flat sealing surface of the base seal when the lid is open and the tank is received in the base unit, the tank including a top outlet surface engaged with a surface of the lid seal and in communication with the connector via the aperture when the lid is closed, wherein the tank is sealingly positioned in the base unit without requiring tubular connection between the tank and base unit.

289. (Currently Amended) A respiratory apparatus for a patient, comprising:

a base unit having a hinged lid, said base unit further including a first seal portion and a second seal portion; and

a removable humidifier tank having a generally flat inlet sealing surface engaged with a generally flat sealing surface of the first seal portion when the lid is open and the

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tank is received in the base unit, the tank including an outlet surface engaged with a surface of the second seal portion when the lid is closed,

wherein in use the first and second seal portions seal with the inlet and outlet of the tank in sealing planes that are generally perpendicular to a direction of flow of pressurized gas through the inlet and the outlet such that the tank is sealingly positioned in the base unit without requiring tubular interconnection between the tank and base unit.

295. (Currently Amended) A humidifier for a continuous positive airway pressure device, the humidifier comprising:

a removable water tank having a water tank lid, said water tank lid having a water tank outlet,

a humidifier base having a water tank receiving portion to receive the water tank and a heater plate to heat water in the water tank;

a humidifier lid having a humidifier lid outlet adapted to mate with an air delivery tube; and

a lid seal positioned between the water tank lid and the humidifier lid, said lid seal being positioned and structured to form a seal surrounding the water tank outlet of the tank lid to establish a sealed air flow path extending from the water tank outlet of the water tank lid, and through the humidifier lid outlet,

wherein the water tank includes an air inlet aperture structured and located to at least partly protect against flowback of water from the inlet aperture of the water tank to

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the continuous positive airway pressure device in use, at least when the humidifier is tipped.

Reasons for allowance

6. The following is an examiner's statement of reasons for allowance: the prior art by itself or in combination does not disclose a humidifier with humidifier lid, a removable water tank housed within the humidifier, the water tank having either a water tank lid or water tank outlet, and a sealed air flow path between a supply of positive airway pressure and an outlet of a humidifier lid.

7. The closest prior art includes Hewson et al. (6,435,180) who discloses a humidifier with humidifier base and lid, water tank with water tank lid, but does not disclose a humidifier lid forming a seal with the water tank lid or outlet defining a sealed flow path from the from the supply of pressure to the humidifier lid outlet. Blackmer et al. (4,953,546) discloses a humidifying device with a humidifier base and top and a water tank with a top, but does not disclose that the water tank is removable. Other pertinent prior art includes Smith (5,588,423), Moberg (6,718,974), Dobson et al. (5,673,687), Chauviaux (6,275,652), Lipscombe et al. (6,554,260), Birdsell (6,052,511), Mizoguchi (4,644,790), Stanek et al. (5,061,405), Glucksman (6,314,237) and Chiu et al. (5,483,616).

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to RACHEL T. YOUNG whose telephone number is (571)270-1481. The examiner can normally be reached on mon-thurs 7 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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